

REMARKS:

Status of claims and amendments

Claims 1-40 are pending in the application. In the Office Action dated June 19, 2006, the Examiner:

1. objected to the drawings for a typographical error and for failing to show the mathematic calculation for the equivalent charge resistance and the no-load voltage; and
2. objected to claims 1-40 for failing to show how the predetermined equivalent charge resistance data and effective no-load charge voltage data are calculated.

In this amendment, replacement drawings are submitted correcting the typographical error. The objections to the claims and drawings for not showing the mathematic calculations for the equivalent charge resistance data, the equivalent charge resistance, the effective no-load voltage data, and the effective no-load voltage, are respectfully traversed as set forth below.

Equivalent charge resistance data; Equivalent charge resistance

Regarding the objection to the claims and drawings for failing to show how the predetermined equivalent charge resistance data and the equivalent charge resistance, respectively, are calculated, Applicant respectfully asserts that a person of ordinary skill in the art would understand these limitations and be able to make and use the method and system specified in the claims based on the teachings of the specification.

Regarding determination of the equivalent charge resistance data, please see paragraphs 52-54, which state:

The predetermined equivalent charge resistance data and the predetermined effective no-load charge voltage data can be determined through experiments.

For example, battery terminal voltages are detected at each of the predetermined SOC's at one of the predetermined charge current ranges while a battery is charged by a constant current at a predetermined temperature. Such detection is repeated for each of the predetermined charge current ranges at various battery temperatures.

Then, the equivalent charge resistances R_{equ} are calculated at the predetermined charge current ranges, the predetermined SOC's, and the predetermined battery temperatures, based on the constant currents and the detected terminal voltages. As an example, if the detected terminal voltage is V_1 when the battery is charged by the constant current I_1 and the detected terminal voltage is V_2 when the battery is charged by the constant current I_2 , the equivalent resistance can be calculated by dividing a difference between the V_2 and the V_1 by a difference between the I_2 and the I_1 , i.e., $R_{equ} = (V_2 - V_1)/(I_2 - I_1)$. By performing this calculation for each of the predetermined SOC's respectively at the predetermined charge current ranges and at the predetermined battery temperatures, the equivalent charge resistance data can be determined.

Regarding determination of the equivalent charge resistance, please see paragraphs 56-57, which state:

Based on the equivalent charge resistance data and the effective no-load charge voltage data, the equivalent charge resistance R_{cha_e} and the effective no-load charge voltage V_{cha_oc} can be calculated at the current SOC, the current battery temperature, and the current charge current.

The equivalent charge resistance R_{cha_e} and the effective no-load charge voltage V_{cha_oc} at the current SOC, the current battery temperature, and the current charge current can be determined through interpolation using the equivalent charge resistance data and the effective no-load charge voltage data.

Applicant respectfully asserts that the specification enables a person of ordinary skill in the art to determine the equivalent charge resistance data and the equivalent charge resistance, and that the inclusion of this exemplary embodiment in the claims and drawings is not necessary to render the claims or drawings complete.

Effective no-load charge voltage data; Effective no-load charge voltage

Regarding the objection to the claims and drawings for failing to show how the effective no-load charge voltage data and the effective no-load charge voltage, respectively, are calculated, Applicant respectfully asserts that a person of ordinary skill in the art would understand these limitations and be able to make and use the method and system specified in the claims based on the teachings of the specification.

Regarding determination of the effective no-load charge voltage data, please see paragraphs 52 and 55, which state:

The predetermined equivalent charge resistance data and the predetermined effective no-load charge voltage data can be determined through experiments....

[T]he effective no-load charge voltage V_{eff} can be calculated based on the calculated equivalent charge resistance data, the constant current, and the detected terminal voltage. For example, the effective no-load charge voltage can be calculated by summing the detected terminal voltage V_1 and a value acquired by multiplying the constant current I_1 by the equivalent charge resistance, i.e., $V_{eff} = V_1 + R_{equ} * I_1$, or by summing the detected terminal voltage V_2 and a value acquired by multiplying the constant current I_2 by the equivalent charge resistance, i.e., $V_{eff} = V_2 + R_{equ} * I_2$. By performing this calculation for each of the predetermined SOC, respectively at the predetermined charge current ranges and at the predetermined battery temperatures, the effective no-load charge voltage data can be determined.

Regarding determination of the effective no-load charge voltage, please see paragraphs 56-57, which are reproduced at the top of this page.

Applicant respectfully asserts that the specification enables a person of ordinary skill in the art to determine the effective no-load charge voltage data and the effective no-load charge voltage, and that the inclusion of this exemplary embodiment in the claims and drawings is not necessary to render the claims or drawings complete.

Conclusions

In view of the foregoing, Applicant believes all claims now pending in this application are in condition for allowance. The issuance of a formal Notice of Allowance is respectfully requested.

Authorization is granted to charge any outstanding fees due at this time for the continued prosecution of this matter to Morgan, Lewis & Bockius LLP Deposit Account No. 50-0310 (matter no. 060944-5000).

Respectfully submitted,



Jessica C. Stahnke (Reg. No. 57,570)

for

Thomas D. Kohler (Reg. No. 32,797)

MORGAN, LEWIS & BOCKIUS LLP

One Market, Spear Street Tower

San Francisco, CA 94105

415.442.1000

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